Note: This revised section to be filed into the Service Manual to replace the section 'Tube Conditioning'.

1x.1 Tube adjustment

1x.1 Conditioning of the tube(s)

Warning! Radiation is released during the procedure!

This procedure must be performed for each new installation, tube replacement, but also if a symptom points to any kind of tube arcing.

Precondiontions / Programmings:

For Optimus RAD & R/F (CU release 3.x)

- Perform the following programmings temporarily for each tube connected to one of the assigned RGDV = Free cassette:

XRGSCOPE
PROGRAM→REGISTRATION DEVICES→RGDV#→DATA SET A:

	Temporarily:	Original:Tube1,2,3
Enable handswitch....	**YES**	Verify the
Synchmaster present	**NO**	custimezed
Exposure switch type	**Double Step**	entries
Exposure series / Tomo...	**YES**	in 2Z-2.x
Mounted radiographical..	**NONE**	

- Reset the generator
- Select appropriate programmed RGDV 'Free cassette' for each tube to be break in.

For Optimus C (Duo Diagnost)

Note: No change of programming is required.

- Select Registration Device ‚Free cassette' for this tube.

Procedure:

- Select large focus

Note: The generator must be in the READY state.

- Run reconditioning procedure for an adapted tube, refer to the table 'Exposure data set for conditioning', left column 'Tube adapted'.

or

- Run conditioning procedure for a new or non-adapted tube, refer to the table 'Exposure data set for conditioning' , right column 'Tube not adapted'.

- It is recommended to monitor the high tension during conditioning. Connect the scope:
  Channel1: kV *AV HT* at EZ 130 X3 (1V/div), scale: 20kV/V
  Trigger external: *CTRL_X_C/* at backpanel EZ X74, negative slope
  Time base: 2ms/div.

- In case of problems like tube arching see flowchart 'Exposure sequence' as an example, apply for applicable kV range only:
  i.e. 109 kV is the max kV value for normal application, perform just up to next higher kV step = 117kV.

Notes (refer to flow chart 'Exposure sequence'): If the tube arcs at a certain kV value, conduct another 3 exposures with same parameters and 10 s pause between subsequent exposures. In case of success (no arcing anymore) continue with next kV step of the table "Exposure data set...".
If the last exposure still arcs go one kV step back and follow normal procedure. If this routine has been performed three times without improvement; → replace the tube.

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Exposure parameter for conditioning					
Tube adapted				**Tube not adapted**	
kV	**mA**	**ms**	# exposures	**kV**	**mAs**
80	10	50	< 1 >	80	0.5
80	10	500	< 1 >	80	5
80	200	250	< 1 >	80	50
10 seconds pause				10 seconds pause	
80	max mA	100	< 1 >	80	100
1 minute pause				1 minute pause	
90	10	50	< 1 >	90	0.5
90	10	500	< 1 >	90	5
90	200	250	< 1 >	90	50
10 seconds pause				10 seconds pause	
90	max mA	100	< 1 >	90	100
1 minute pause				1 minute pause	
100	10	50	< 1 >	100	0.5
100	10	500	< 1 >	100	5
100	200	250	< 1 >	100	50
10 seconds pause				10 seconds pause	
100	max mA	100	< 1 >	100	100
1 minute pause				1 minute pause	
110	10	50	< 1 >	110	0.5
110	10	500	< 1 >	110	5
110	200	250	< 1 >	110	50
10 seconds pause				10 seconds pause	
110	max mA	100	< 1 >	110	100
1 minute pause				1 minute pause	
120	10	50	< 1 >	120	0.5
120	10	500	< 1 >	120	5
120	200	250	< 1 >	120	50
10 seconds pause				10 seconds pause	
120	max mA	100	< 1 >	120	100
1 minute pause				1 minute pause	
130	10	50	< 1 >	130	0.5
130	10	500	< 1 >	130	5
130	200	250	< 1 >	130	50
10 seconds pause				10 seconds pause	
130	max mA	100	< 1 >	130	100
1 minute pause				1 minute pause	
140*	10	50	< 1 >	140*	0.5
140*	10	500	< 1 >	140*	5
140*	200	250	< 1 >	140*	50
10 seconds pause				10 seconds pause	
140*	max mA	100	< 1 >	140*	100
1 minute pause				1 minute pause	
145*	10	50	< 1 >	145	0.5
145*	10	500	< 1 >	145	5
145*	200	250	< 1 >	145	50
10 seconds pause				10 seconds pause	
145*	max mA	100	< 1 >	145	100
1 minute pause				1 minute pause	
148*	10	50	< 1 >	148	0.5
148*	10	500	< 1 >	148	5
148*	200	250	< 1 >	148	50
10 seconds pause				10 seconds pause	
148*	max mA	100	< 1 >	148	100
1 minute pause				1 minute pause	
150*	10	50	< 1 >	150	0.5
150*	10	500	< 1 >	150	5
150*	200	250	< 1 >	150	50
10 seconds pause				10 seconds pause	

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150*	max mA	100	< 1 >	150	100

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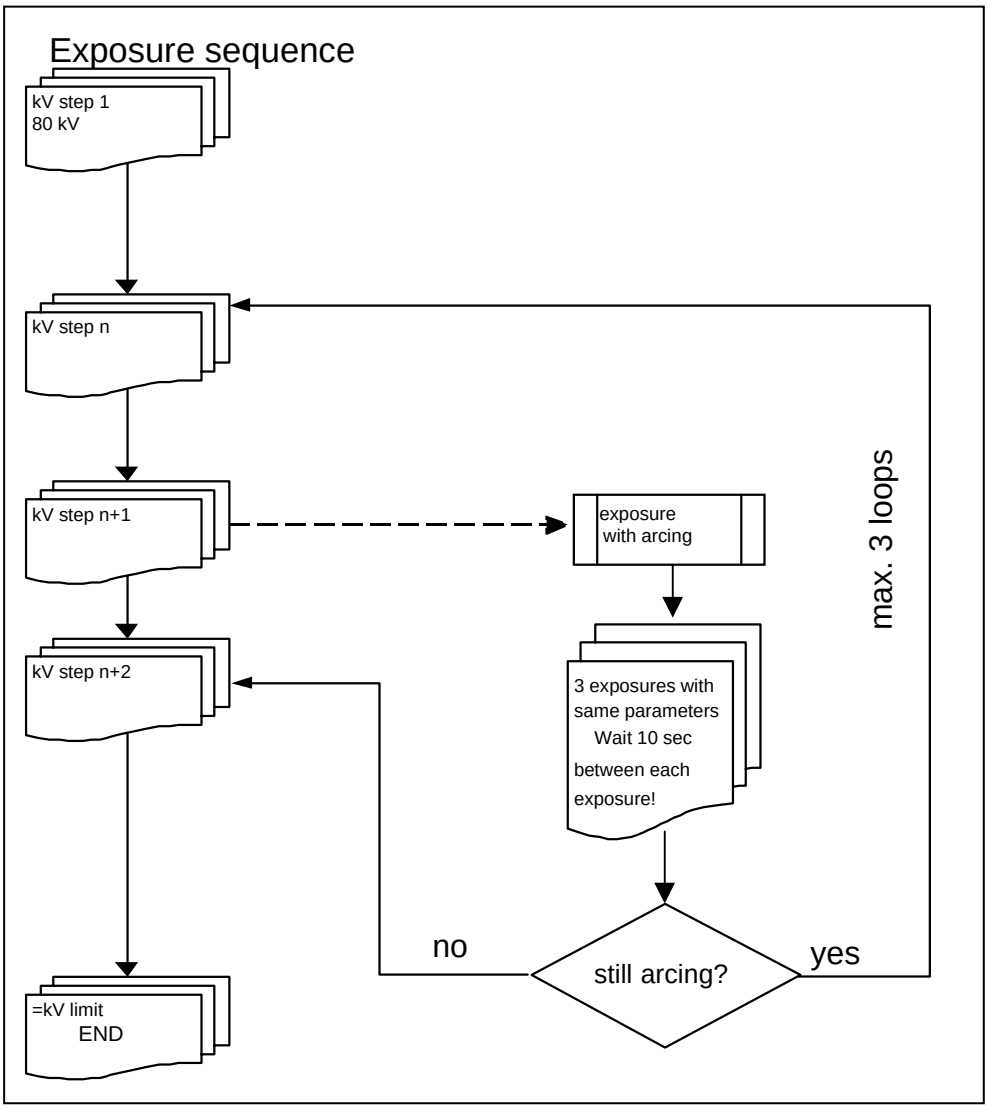

Note: If a tube arcs at a kV value which is not required for application the max kV (e.g.117kV) program this new limit value via

XRGSCOPE
Program → Tubes → Tube Limits → Max. Tube Voltage Limit [kV]: [**117**].

Since the limit value got reduced by this reason, a following re-adaptation procedure will set the field *‚Adapted To [kV]'* to this value as well.

- Set RGDV programming to original status if no adaptation procedure has to be executed.
- Reset the generator

(Note: **If adjustment 'factor for duty cycle' was interrupted by tube arcing, return to that procedure now.)**

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